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Original Article

Self-perception of dentists and physiotherapists assistants and professors of higher education institutions regarding cervicobrachialgias symptoms

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Abstract: Introduction: Repetitive strain injuries or work related to musculoskeletal disorders (RSI) represent a public health problem and are closely associated with occupational activities. Many physiotherapists and surgeon-dentists, who also teach, often undergo excessive workload, often having to reconcile the practice of their profession with the activities inherent in teaching. Objective: To evaluate the association of surgeon-dentists and physiotherapists who add teaching to their clinical activities, with respect to the development of Cervicobrachialgias related labor activities. Method: This is a transversal descriptive cohort study with a sample composed of 102 Surgeon-dentists and Physiotherapists. A total of 52 surgeon-dentists were subdivided, twenty-six in the subgroup ADT (Assistant dentist teachers) and 26 in the subgroup AD (assistant dentists); along with 50 Physiotherapists who were also divided into two subgroups, 25 in the APT subgroup (assistant physiotherapist teachers) and 25 in the AP subgroup (assistant physiotherapists). The Nordic musculoskeletal symptoms questionnaire-QNSO was adapted and validated for the Portuguese language. Results: We observed that for both, Physiotherapists and Dentists showed more evident pain in the shoulders, wrists/hands/fingers, and spine. Among the ADT, 88.46% (46) confirmed the relationship between their pain and professional practice, particularly in the spine, shoulders, wrists/hands/fingers ($p<0.001$). The percentage of pain among the groups of Physiotherapist and Surgeon-dentists teachers was not statistically significantly different ($p> 0.05$) when compared to Physiotherapists and Surgeon-dentists. Conclusion: This study **c**oncludes that musculoskeletal symptoms frequency was elevated in AD and AP mainly in the regions of the shoulders, wrists/hands/fingers, and cervical region. The fact that they accumulate the role of teachers in their professional practice did not seem to accentuate the pain of these individuals.

Keywords: *Occupational Risks, Neck Pain, Cumulative Trauma Disorders.*

Autopercepção de cirurgiões-dentistas e fisioterapeutas assistencialistas e docentes de instituições de ensino superior quanto à sintomatologia das cervicobraquialgias

Resumo: Introdução: As lesões por esforço repetitivo (LER) e os distúrbios osteomusculares relacionados ao trabalho (DORT) representam um problema de saúde pública e estão intimamente associados às atividades laborais. Muitos fisioterapeutas e cirurgiões-dentistas, que têm atuado também como professores, frequentemente submetem-se à excessiva carga de trabalho, tendo, muitas vezes, de conciliar a prática clínica de sua profissão com as atividades inerentes à docência. Objetivo: Avaliar a autopercepção de cirurgiões-dentistas e de fisioterapeutas que acumulam o cargo de professores com as suas atividades clínicas, quanto ao desenvolvimento de cervicobraquialgias relacionadas às atividades laborais. Método: Estudo de coorte transversal, descritivo, que compreendeu amostra de conveniência composta por 102 cirurgiões-dentistas e fisioterapeutas. Os 52 cirurgiões-dentistas foram subdivididos: 26 no subgrupo

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DAD (dentistas assistencialistas e docentes) e 26 no subgrupo DA (dentistas assistencialistas); e os 50 fisioterapeutas também foram divididos em dois subgrupos: 25 no subgrupo FAD (fisioterapeutas assistencialistas docentes) e 25 no subgrupo FA (fisioterapeutas assistencialistas). Foi utilizado o Questionário Nórdico de Sintomas Osteomusculares (QNSO), adaptado e validado para o português. Resultados: Observou-se que, tanto nos fisioterapeutas como nos cirurgiões-dentistas, a dor se fez mais presente nas regiões de ombros, punhos/mãos/dedos e coluna cervical. Entre os DAD, constatou-se que 88,46% (46) confirmaram perceber uma relação entre a sua dor e a prática profissional, em especial nas regiões representadas pela coluna cervical, pelos ombros e pelos punhos/mãos/dedos ($p < 0,001$). O percentual de dor entre os grupos de fisioterapeutas e cirurgiões-dentistas docentes não apresentou diferença estatisticamente significativa, quando comparado aos fisioterapeutas e cirurgiões-dentistas assistencialistas ($p > 0,05$). Conclusão: Conclui-se que a queixa de sintomas osteomusculares foi elevada em FA e DA, principalmente, nas regiões dos ombros, dos punhos/mãos/dedos e da coluna cervical. O fato de acumularem a função de docentes com sua prática profissional pareceu não acentuar o quadro álgico desses indivíduos.

Palavras-chave: *Risco Ocupacional, Cervicalgia, LER/DORT.*

1 Introduction

Repetitive strain injuries (RSI) and work-related musculoskeletal disorders (WMSD) can be understood as damage due to overuse imposed on the musculoskeletal system and lack of recovery time. Together, they can be identified as a work-related syndrome, with the occurrence of several concomitant symptoms, such as pain, paresthesia, feeling of heaviness and fatigue. Such clinical conditions usually have an insidious onset and they are associated with cumulative trauma (HARCOMBE et al., 2010).

RSIs and WMSDs represent a public health problem due to the significant increase in the number of cases affecting different categories of workers (MEDEIROS; SEGATTO, 2012). In the exercise of their activities, the health professionals suffer continuous exposure to the risk factors, a fact that favors the slow and gradual illness of the worker (BARBOSA; SANTOS; TREZZA, 2007). Surgeon-dentists and physiotherapists are among health professionals who participate in this group and who present a high prevalence of these clinical conditions (MORAES; BASTOS, 2013). In these professionals, repetitive movements, inadequate postures and high levels of strength in performing rehabilitation techniques are considered primary risk factors, associated with RSI and WMSD (MARTINEZ et al., 2014).

Cervicobrachialgia, painful shoulder, thoracic duct syndrome, lateral epicondylitis, carpal tunnel syndrome, Quervain's tenosynovium, among others are some of the diseases that affect health professionals (MEDEIROS; SEGATTO, 2012). Health professionals generally perform a lot of physical effort associated with repeated movements. Often, they work in an overload position, with flexion and abduction of the upper limbs (UL) above the shoulder´s height, using force and compression on the shoulder or the shoulder against some object. Once exposed to this overload, these professionals make up a risk group to develop musculoskeletal injuries (BRASIL, 2012).

It is believed that health professionals who start teaching may be at higher risk of developing RSI/WMSD because they are subjected to more stressors, such as an increase in the workload resulting from the dual role of teachers/assistants, inadequate postures, vocal cords and repetitive movements related to the use of multimedia resources (BRASIL, 2012).

Prior knowledge of the risk factors and health problems associated with the development of RSI/WMSD can contribute to the individual´s awareness and to the construction and development of prevention strategies and health treatments related to these pathologies. Also, RSI and WMSD do not have exclusive occupational etiology, and their genesis may be associated with other factors, such as lifestyle, posture, sedentary lifestyle, previous traumas and psychosocial factors (ALCÂNTARA; NUNES; FERREIRA, 2011).

The objective of this study was to evaluate the self-perception of surgeon-dentists and physiotherapists in the teaching and care of symptomatology related to cervicobrachialgia.

2 Method

This was a descriptive cross-sectional study, carried out from September 2015 to April 2016, with a convenience sample of 102 professionals,

52 surgeon-dentists and 50 physiotherapists working in their respective areas. Invitation letters were sent to professionals from three university centers and city halls, located in the city of Salvador/BA and metropolitan region, respectively. The study was approved by the Ethics and Research Committee on Human Beings of the University Hospital Prof. Edgard Santos under the protocol number 843.886.

It was established that the participants would be health professionals in the dentistry and physiotherapy area, active exclusively in the practice of the profession for at least two years, and/or teachers who develop clinical practices inherent to their profession as an inclusion criterion for participation in the research. Individuals who agreed to participate in the study signed the Free and Informed Consent Term (TCLE).

Professionals who reported some type of previous trauma in the cervical region, with consequent functional impairment were excluded. Pregnant women were also not included in the research sample. This group, in particular, usually has retention of body fluids, with the possibility of showing compression of the median nerve and development of carpal tunnel syndrome.

The sample was distributed in two groups of dentists and physiotherapists. The group of surgeon-dentists was divided into two subgroups: one group composed exclusively of 26 assistant dentists (AD) and another group composed of 26 assistant dentist teachers (ADT). The group of physiotherapists was divided into two subgroups: one group comprised of 25 assistant physiotherapists (AP) and the other group was composed of 25 assistant physiotherapists teachers (APT).

The Nordic Osteomuscular Symptom Questionnaire (QNSO) was the instrument used to collect data on the self-perception of the professionals participating in the research regarding the development of cervicobrachialgias. The items described in the questionnaire enabled to evaluate the symptoms in the sample and its relation to the musculoskeletal morbidity perceived by the health professionals included in the study. Demographic, occupational, and personal habits variables were also recorded in Excel spreadsheet. The QNSO covers simple and direct questions and it is divided into two parts. The first part contains a picture of a body map with the trunk and upper limbs in which participants had to identify where they had pain, discomfort, or paresthesia during the past 12 months. The second part of the QNSO includes demographic data, such as gender, age, education level, specialty, time of profession, other professional activities, regularity of physical activity, the perception of the relationship between the pain symptomatology and the work activity and other activities performed daily during the last 12 months. The questionnaire was answered individually at the end of the working day after explaining the instructions necessary for the correct completion.

For the analysis of the demographic and clinical data, descriptive statistics were performed, with a presentation in graphs and tables. Data on continuous variables were described in averages (age and workday) and categorical variables were described in frequency measures and expressed as percentages (gender and profession). The analysis of the intergroup data for nominal quantitative measures, such as pain, relation to work and type of profession, was made in relation to the domains of the questionnaire and the times of service and professional performance by the Chi-Square test.

3 Results

3.1 Perception of the physiotherapists regarding the symptomatology of cervicobrachialgias

The group of physiotherapists was represented by 49% (50) of the total sample studied, with an overall mean age of 35 years old. There were 72% of the participants (36) female and 28% (14) male. Also, 50% (25) worked exclusively as physiotherapists (AP), while the other 50% (25) had the role of teachers (APT) (Table 1).

Table 2 shows the percentages of pain in physiotherapists and surgeon-dentists and the most affected anatomic regions. It was observed that, in the AP subgroup, the pain was more present in the shoulders, wrists/hands/fingers, and cervical spine regions, with 72% (18), 56% (14), 76% (19), respectively. However, the occurrence of pain at these specific places was more sporadic. A higher percentage of professionals reported that they rarely perceived this symptom in the mentioned areas, with 77.7% (14) in the shoulders, 85.7% (12) in wrists/hands/fingers and 68.4% (13) in the column cervical. In the APT subgroup, similar aspects were observed regarding pain localization, with 36% (9) for shoulders and wrists/hands/fingers and 72% (18) for the cervical region. The highest percentage in the cervical region was represented by individuals

who complained of frequent episodes of pain, with 55.5% (10).

Table 3 highlights the absolute numbers and the respective percentages related to the variable paresthesia and to the determination of the classification of its different types of occurrence. It was verified that only 20% (10) of the total physiotherapists had a sensation of paresthesia. The individuals that belonged to the AP subgroup represented 30% (3), and those in the APT subgroup, 70% (7) of this total percentage. When asked about the type of paresthesia, both subgroups reported only tingling and pricking sensations. In the AP subgroup, 66.6% (2) of the participants reported experiencing a tingling sensation, and 33.4% (1), of the stabbing, while in the APT group, 85.7% (6) reported tingling, and 14.3% (1), a stitch sensation.

Figure 1 represents the percentage of professionals who specifically related pain sensation to their work activity. In both subgroups of physiotherapists, it was observed that 64% (32) confirmed a relationship between their pain and professional practice and 36% (18) did not ratify this association.

Table 1. Sociodemographic characteristics of dentists and physiotherapists evaluated, from September 2015 to April 2016, in Salvador /BA (n = 102).

Characteristics	Percentage (%)
Age	
18- 30	22.5%(23)
31-50	64.7%(66)
>51	12.7%(13)
Hours (day)	
6h	3.9% (4)
8h	35.2%(36)
>8h	60.7%(62)
Profession	
Dentist	51%(52)
Physiotherapists	49% (50)
Gender	
Male	37.2%(38)
Female	62.7%(64)
Marital Status	
Single	26.4%(27)
Married	73.5%(75)

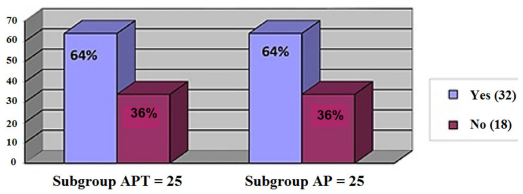

Figure 1. Percentage of assistant physiotherapists (AP) and assistant physiotherapist teachers (APT) who related the pain sensation specifically to their work activity.

Table 2. Work-related osteomuscular symptomatology by anatomical region, reported by the evaluated dentist and physiotherapists (n = 102).

Anatomical region	ADT (26)	AD (26)	APT (25)	AP (25)
Cervical region	88.4%(23)	84%(21)	72%(18)	76%(19)
Shoulders	61.5%(16)	72%(18)	36%(9)	72%(18)
Arms	50%(13)	38.4(10)	20%(5)	16%(4)
Elbows	30.7%(8)	19.2%(5)	12%(3)	20%(5)
Forearms	34.6%(9)	26.9%(7)	8%(2)	28%(7)
Wrists/hands/fingers	73%(19)	64%(16)	36%(9)	56%(14)

ADT = Assistant dentist teachers; AD = Assistant dentists; APT = Assistant physiotherapist teachers; AP = Assistant physiotherapists.

Table 3. Absolute numbers and percentages related to the variable paresthesia and to the determination of the classification of its types of occurrence.

Subgroups	Health professionals				
	DAD (26)	DA (26)	FAD (25)	FA (25)	TOTAL
Yes	57.3%(8)	42.7%(6)	70%(7)	30%(3)	23.5%(24)
Types of paresthesia					
Tingling	75%(6)	50%(3)	85.7%(6)	66.6%(2)	70.8%(17)
Cramp	0	33.3%(2)	0	0	8.3%(2)
Pony	0	0	14.3%(1)	33.4%(1)	8.3%(2)
Numbness	25%(2)	16.6%(1)	0	0	12.5%(3)

ADT = Assistant dentist teachers; AD = Assistant dentists; APT = Assistant physiotherapist teachers; AP = Assistant physiotherapists.

3.2 Perception of the dentists regarding the symptomatology of cervicobrachialgias

This group was represented by 51% (52) of the total sample, with an overall mean age of 40 years old. There were 54% of the participants (28) female and 46% (24) male. Also, 50% (26) acted exclusively as surgeon-dentists (SD), while the other 50% (26) accumulated the role of teachers (ADT) (Table 1).

Table 2 shows the frequency of pain in this professional category. It was observed that the AD subgroup´s pain was more present in the shoulders, wrists/hands/fingers and cervical spine regions, with percentages of 72% (18), 64% (16), 84% (21), respectively. However, their occurrence at these specific places was more sporadic, since a higher percentage of professionals reported they rarely perceived this symptom in these areas, with 61.1% (11) shoulders, 68.7% (11) in wrists/hands/fingers, 47.6% (10) in the cervical spine. In the ADT subgroup, there were similar aspects regarding the localization of pain, with percentages of 61.5% (16) for the shoulders, 73% (19) for the wrists/hands/fingers and 88.4% (23) for the cervical spine.

Table 3 highlights the absolute numbers and the respective percentages related to the variable paresthesia and to the determination of the classification of its different types of occurrence. It was found that 26.9% (14) of the total surgeon-dentists had a sensation of paresthesia. Of this percentage, individuals belonging to the ADT subgroup were 57.3% (8), and those in the AD subgroup were 42.7% (6).

When asked about the type of paresthesia, both subgroups reported tingling, numbness, and cramping sensations. In the ADT subgroup, 75% (6) of the participants reported experiencing a sensation of tingling, and 25% (2) of numbness, while in the AD group, 50% (3) reported tingling, 33.3%), sensation of cramp, and 16.6% (1), sensation of numbness.

Figure 2 represents the percentage of professionals who specifically related pain sensation to their work activity. In the ADT subgroup, it was observed that 88.46% (46) confirmed to perceive a relationship between their pain and the professional practice and 11.54% (6) did not confirm this association. In 76.92% (20) of the individuals who belonged to the subgroup, they stated that they perceived a relationship between their pain and professional practice and 23.08% (5) did not confirm this association.

When the association test was performed to determine if the health professionals (physiotherapists and surgeon-dentists) who were also teachers felt pain or perceived to feel more pain, the results did not indicate statistical significance (p> 0.05). In the evaluated individuals, both the assistant professionals and the teachers felt pain and related it with their work, but the dual function (teacher/assistant) did not influence in the perception of the pain.

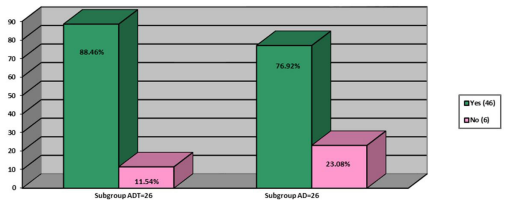

Figure 2. Percentage of assistant dentists (AD) and assistant dentist teachers (ADT) who related the pain sensation specifically to their work activity.

Table 4. Clinical complaint of presence or absence of pain and its relation to work (n = 102).

Relationship with work (%)	Cervical	Shoulders	Wrists/ hands/ fingers
Yes	71.6 (73)*	52.9 (54)*	52 (53)*
No	7.8 (8)	6.9 (7)	4.9 (5)
Total	79.4 (81)	59.8 (61)	56.9 (58)

*p < 0.001.

Although no statistical significance was observed in the professions, some regions of the body presented a higher percentage of pain symptomatology for both professional groups. These regions were represented by the cervical spine, shoulders and wrists/hands/fingers (Table 4).

4 Discussion

In this study, it was possible to observe a high occurrence of complaints related to the osteomuscular system in both surgeon-dentists and physiotherapists. Of the total number of participants, 62.7% (64) were female, while 37.2% (38) were male. The female majority is a finding that resembles other studies with the same population group (REGIS; MICHELS; SELL, 2009).

Physiotherapy is a profession of scientific bases, with essential participation in the health system. During the professional training, the physiotherapist obtains knowledge of biomechanics and kinesiology, as well as notions about suitable techniques to be used during the rehabilitation process. However, this knowledge

does not confer immunity to the development of RSI/WMSD (BORK, 1996). Rehabilitation techniques, mainly manual therapies, require great physical effort and tension of the cervical region, besides involving manipulation activities using hands, wrists and fingers, lifting, inclination, flexion and rotation of the trunk, assuming inadequate postures, factors that in the long term may be responsible for the origin of WMSD (CARREGARO; TRELHA; MASTELARI, 2006).

The evaluated physiotherapists reported a high occurrence of musculoskeletal problems, especially the cervical, shoulder and wrist/hand/fingers regions. It is known that the spine is responsible for the support and movement of the head and for the protection of the neural and vascular structures. However, there is great difficulty in obtaining reliable data to estimate the actual prevalence of cervicalgia, since it is a group of diseases with multifactorial clinical aspects, ranging from individual risk factors, such as physical and psychosocial characteristics, to related factors with ergonomics and work activities involving continuous vibration of the hands and arms, fixed and prolonged postures, increased trunk curvature, and pronounced cervical flexion (SCHOLEY; HAIR, 2004). The use of the questionnaire in this study allowed inferring for both subgroups of physiotherapists that 64% (32) confirmed to perceive a relationship between their pain and professional practice and that 36% (18) did not confirm this association. This occurrence suggests that the population of physiotherapists has a susceptibility to the development of musculoskeletal problems.

Regarding the evaluated surgeon-dentists, there was also a high occurrence of pain in the shoulder, wrist/hands/fingers and cervical regions. The AD subgroup presented a percentage of 72% (18) in the shoulders, 64% (16) in wrists/hands/fingers, and 84% (21) in the cervical spine. In the subgroup of ADT participants, there were similar aspects regarding the location of pain, with 61.5% (16) for the shoulders, 73% (19) for the wrists/hands/fingers and 88.4% % (23) for the cervical spine. In the ADT subgroup, it was observed that 88.46% confirmed to perceive a relationship between their pain and professional practice and 11.54% did not confirm this association. Among the individuals that belonged to the subgroup, 76.92% stated that they perceived a relationship between their pain and professional practice, and 23.08 did not confirm this association. The higher percentage in the ADT subgroup may suggest that surgeon-dentists who perform dual functions, also acting in teaching, are more susceptible to the development of RSI/WMSD. One possible justification for this finding may be the increase in the workload of these professionals. Although this variable was not the primary object of this investigation, new studies that evaluate the relationship between the perception of cervicobrachialgia symptomatology and the increase in workload become relevant.

Musculoskeletal disorders are common and prominent complaints among dentists and reveal the intimate relationship between dental practice and the development of RSI/WMSD due to the physical and psychological distress to which the professional is subjected in his/her work routine (SAMOTOI; MOFFAT; THOMSON, 2008). In a study by Pereira et al. (2004), both the general clinical dentists (40.71%) and the specialists (43.57%) reported the presence of WMSD. Endodontics was the specialty with the greatest number of professionals affected. According to Casarin e Caria (2008), 60% of dentists had some type of musculoskeletal pain in the work environment, in the region of the neck, back, shoulders and upper limbs as the most referred to places of pain, similar to the findings of this study. The specificity of surgeon-dentists´ work activities, using the hands/wrists/fingers, shoulders and cervical spine, explains a greater percentage of symptomatology in these areas, and this fact may contribute to the early retirement of these professionals. Thus, the work activity of surgeon-dentists can be considered as a risk factor for the development of musculoskeletal disorders. During their work cycle, these professionals often adopt inadequate postures, a fact that may justify the need for preventive interventions for the non-aggravation of their injuries.

5 Conclusion

The frequency of musculoskeletal symptoms, such as pain, paresthesia, feeling of heaviness and fatigue, is similar in both professions, especially in the shoulder, wrist/hand/fingers and cervical spine regions. Another relevant data found in this study was that both professions related their pain sensation specifically to their work activity. The percentage of pain between the APT and AP groups and the ADT and AD groups did not have a statistically significant difference.

The authors of this article suggest the need to carry out preventive and ergonomic measures to prevent the progression and aggravation of the reported symptoms.

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Author's Contributions

All authors equally contributed and approved the final version of the text.